Amendments to the Claims

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (Currently Amended) An engine control device, comprising:

crankshaft phase detecting means for detecting ~~the~~ a phase of a crankshaft;

intake air pressure detecting means for detecting ~~the~~ an intake air pressure in an intake pipe of an engine;

stroke detecting means for detecting a stroke of ~~said~~ the engine based on at least ~~said~~ the phase of ~~said~~ the crankshaft detected by the crankshaft phase detecting means;

engine control means for controlling ~~the~~ an operating condition of ~~said~~ the engine based on ~~said~~ the stroke of the engine detected by ~~said~~ the stroke detecting means and ~~said~~ the intake air pressure detected by said intake air pressure detecting means; and

engine rotational speed detecting means for detecting ~~the~~ an engine rotational speed,

wherein ~~said~~ the stroke detecting means detects a stroke based on a variation in intake air pressure detected by ~~said~~ the intake air pressure detecting means and detects a stroke based on a variation in the engine rotational speed detected by ~~said~~ the engine rotational speed detecting means, and completes stroke detection when the detected strokes coincide with each other.

2. (New) An engine control device, comprising:

a crank angle sensor that detects a phase of a crankshaft;

an intake air pressure sensor that detects an intake air pressure in an intake pipe of an engine;

a stroke detection permitting part that detects a stroke of the engine based on at least the phase of the crankshaft detected by the crank angle sensor;

an engine control unit that controls an operating condition of the engine based on the stroke of the engine detected by the stroke detection permitting part and the intake air pressure detected by the intake air pressure sensor; and

an engine rotational speed calculating part that detects an engine rotational speed,

wherein the stroke detection permitting part detects a stroke based on a variation in intake air pressure detected by the intake air pressure sensor and detects a stroke based on a variation in the engine rotational speed detected by the engine rotational speed calculating part, and completes stroke detection when the detected strokes coincide with each other.

3. (New) The engine control device according to claim 2, wherein the crankshaft includes a plurality of teeth.

4. (New) The engine control device according to claim 2, wherein the crank angle sensor is a magnetic sensor.

5. (New) The engine control device according to claim 3, wherein the plurality of teeth are formed on an outer periphery of the crankshaft at equal intervals.

6. (New) The engine control device according to claim 2, wherein the engine control unit is a microcomputer.

7. (New) The engine control device according to claim 2, wherein the engine rotational speed calculating part calculates the rotational speed of the crankshaft as an output shaft of the engine.

8. (New) The engine control device according to claim 2, wherein the stroke detection permitting part outputs stroke detection permitting information.

9. (New) The engine control device according to claim 2, wherein the engine rotational speed calculating part calculates instantaneous engine speeds at top and bottom dead centers.

10. (New) The engine control device according to claim 2, further comprising a cooling water temperature sensor that detects a temperature of the engine.

11. (New) The engine control device according to claim 2, further comprising an exhaust air-fuel ratio sensor that detects an air-fuel ratio of an exhaust pipe.

12. (New) The engine control device according to claim 2, further comprising an intake temperature sensor that defects a temperature of the intake pipe.

13. (New) A method for manufacturing an engine control device, comprising:

detecting a phase of a crankshaft;

detecting an intake air pressure in an intake pipe of an engine;

detecting a stroke of the engine based on at least the phase of the crankshaft;

controlling an operating condition of the engine based on the stroke of the engine and the intake air pressure;

detecting an engine rotational speed;

detecting a stroke based on a variation in intake air pressure;

detecting a stroke based on a variation in the engine rotational speed; and

completing stroke detection when the detected strokes coincide with each other.

14. (New) The method for manufacturing an engine control device according to claim 13, further comprising providing the crankshaft with a plurality of teeth.

15. (New) The method for manufacturing an engine control device according to claim 14, further comprising forming the plurality of teeth on an outer periphery of the crankshaft at equal intervals.

16. (New) The method for manufacturing an engine control device according to claim 13, further comprising calculating the rotational speed of the crankshaft as an output shaft of the engine.

17. (New) The method for manufacturing an engine control device according to claim 13, further comprising outputting stroke detection permitting information.

18. (New) The method for manufacturing an engine control device according to claim 13, further comprising calculating instantaneous engine speeds at top and bottom dead centers.

19. (New) The method for manufacturing an engine control device according to claim 13, further comprising detecting a temperature of the engine.

20. (New) The method for manufacturing an engine control device according to claim 13, further comprising detecting an air-fuel ratio of an exhaust pipe.